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MATHEMATICS CLUBS.

BY LOUISA M. WEBSTER.

Believing that courses in mathematics are second to none in value as a mental discipline, it seems meet that the teacher's best efforts may be profitably spent in devising plans which will stimulate a desire for research. I speak from personal experience when I say that one of our most difficult problems lies in making provision for the many points of a crowded curriculum which must be treated lightly, assigned for outside work or entirely omitted.

I remember, a most forceful lesson on roulettes was given as a club paper by a student whose time was not limited. She had done considerable reading, her facts were arranged systematically, she reduced much of her reasoning to the level of the lower-class students, and treated the subject more exhaustively than could have been done during the time allotted to one recitation.

That much valuable information is crowded out of the curriculum, that many most important facts are pushed aside from classroom work, that the time allowed to lectures is far too short to satisfactorily cover the majority of points which even the average student would find interesting are well-known and much-to-be-regretted conditions. The Mathematics Club offers a remedy, and also an opportunity for considering attractive views of the subject which find no place in the classroom.

The Hunter College Mathematics Club was organized by Professor Requa "as the result of a desire on the part of both the teaching and student bodies to investigate matters connected with mathematics, to study the phases of mathematical development which are crowded out of classroom work, and to keep the students in touch with the best thoughts of the times. It aims to be a source of profitable pleasure." That it has proven so all members will testify.

The meetings are held once a month from October to June. The first of each semester is largely a social function—a welcome to the freshmen. About every third year we invite, as guests of honor, the graduates of the mathematics department who have won some distinction. Our alumnæ members are loyal. We seldom have a meeting that is not attended by several. Many are located in out-of-town schools. They write of their experiences, and this is helpful to the undergraduates; it shows them the practical side of the young teacher's work, the many rounds of the professional ladder, and the ever-increasing demand on the teacher's equipment. We take this as an evidence of their continued interest in the work, and their willingness to lend a helping hand.

Professor Requa says a few words at each meeting. Her talks offer suggestions for study or research or a comment on a magazine article or newspaper clipping. They always stimulate a desire for the further development of her topic. Every member of the teaching staff takes a deep interest in the work of the club. One serves as treasurer, collecting the 50 cents dues and acting as advisor for expenditures; one has general supervision, and others contribute papers and help wherever and whenever it is possible. While the topics are assigned to the students, each speaker works out her own subject matter. Usually the talks are given without notes, other than the citations of references. Illustration by models and blackboard drawings is extensively used. Inspiration and profit have also been derived from the talks given by men and women prominent in the mathematical field.

The president, vice-president, and secretary are members of the student body, chosen from the sophomore and junior grades, to serve a year. The candidates must have a record of superior scholarship and their interest in the club work must have been proven in some definite way, not merely by attendance at meetings. The president is always a junior who must have shown marked ability in her chosen field, also administrative powers. She hands the office to her successor as she reaches the upper senior grade. We consider the active co-operation of the students in the management of the club a valuable adjunct to their training for practical life. They become thoroughly impressed with the importance of study and research. Within the past three years eighteen of the graduates of the department have taken their master's degree. Several who have done some graduate studying together presented the department with a set of books they had found specially useful, as an expression of appreciation of the benefit they have derived from the club.

Our club has been in existence eight years. It is a pleasure to report that two presidents have received high-school appointments, one is studying medicine, two have temporary assignments for college work, one is teaching in an elementary school, and another, now studying law, won the scholarship at New York University, when a member of the Woman's Law Class.

A list will show that the topics are chosen with reference to their mathematical or scientific interest.

The Parallel Axiom: Dr. F. Parthenia Lewis, Goucher College.

The Quadrature of the Circle: Dr. Elizabeth B. Cowley, Vassar College.

The Three Normals of the Parabola: Mr. John H. Denbigh, Morris High School, New York.

The Fourth Dimension: Dr. Feldman, Curtis High School, Staten Island.

The Application of Higher Mathematics to Business Principles: Dr. Schlaucht, High School of Commerce, New York.

Points on Which to Judge a Recitation in Mathematics: Dr. Breckenridge, Teachers' College.

The Benefits to be Derived from the Study of Mathematics: Dr. David L. Arnold, Julia Richman High School.

A Special Course in Geometry: Miss Matilda Auerbach, Ethical Culture School, New York City.

The Golden Age of Mathematics: Professor Emma M. Requa, Hunter College.

The Nature of Mathematical Knowledge: Professor Emma M. Requa, Hunter College.

Zero: Professor Julia Chellborg, Hunter College.

Calculating Machines: Professor Lao G. Simons, Hunter College.

Reports on Papers Read at Math. Assn. Meetings: Miss Evelyn Walker, Hunter College.

Old Mathematical Instruments: Miss Marcia Latham, Hunter High School.

Sonya Kovalesky: Miss Jean Robertson, Hunter High School.

The Geometry of Movement: Miss Martha Shott, Hunter High School.

Motion Pictures in Mathematics: Miss Grace Peters, Hunter High School.

Infinity: Miss Julia Simpson, a Hunter Alumna now on the Germantown High School staff.

Roulettes: Miss Edith Bainton, a Hunter Alumna of the Julia Richman staff.

The following have been given by student members:

The Mysticism of Numbers.
The History of Japanese Mathematics.
Baron Napier—His Life and Works.
What Women have Accomplished in Science.
Digital Reckoning.
Mathematical Fallacies.
The History of Time-pieces.
The Transit.
The Anaglyphs.

APPENDED LIST.

The Trisection of the Angle.
The Materials Used in the Teaching of Mathematics.
The Fundamental Principles of Universals.
The Russian Method of Multiplication.
The Different Proofs of the Pythagorean Formula.
The Properties of Number.
Algebraic Fallacies.
Non Euclidean Geometry.
The History of the Metric System.
Alligation.
Lincoln's Debt to Mathematics.
Magic Squares.
Ross's Blocks.
The Use of Imagination in Mathematics.
The Watch as a Compass.
The Life and Work of Galileo.

Mathematicians Who Have Become Famous in Other Fields.
Mathematics in Astronomy.
The Meaning of Billion.
Mathematics in Nature.
Number Games.

"Every Little Movement."

No longer does the college maid
Waste time or midnight oil,
Projections, trig. and logarithms
She's mastered without toil.
The higher math., all clear appears,
She sends all care away,
But integration is the thing
That holds the floor to-day—Ah!

Ev'ry little symbol has a meaning all its own,
Ev'ry integration by new formulæ are shown,
And hopeful feelings
That came a-stealing
O'er your being
Now fly despairing
As you work on, with some new methods,
Little methods, all, all your own.

It makes no difference, high or low,
Your "dates" go on the same;
When someone mentions tests are near
You work with might and main.
You take your seat in confidence,
But signs which once seemed clear
Now seem to mean a thousand things
Which cannot fit in here—Ah!

Ev'ry little symbol has a meaning all its own,
etc., etc.

L. HERTZ, 1910.

O Dear! What Can the Matter Be?

O dear! what can the matter be?
Dear, dear! what can the matter be?
O dear! what can the matter be?
This problem won't work out right!
We've struggled, we've juggled, equations we've buggled;
We've added, divided, subtracted—we tried it
Most sweetly, discreetly, and then we decided
To let it severely alone.

Second Verse.

O dear! what can the matter be?
Dear, dear! what can the matter be?
O dear! what can the matter be?
Th' ghost of the problem remains.
It haunts us, it taunts us, with errors it flaunts us;
We try to efface it, but mem'ry won't chase it—
When, lo, inspiration!
With courage we face it, and quickly we make it our own.

Number Song.

Tune—"Lulu Is Our Darling Pride."

Numbers are our pride and joy,
Numbers great, numbers small;
Juggle with them like a toy
At our beck and call;
Nor does vast infinity
Puzzle or distress us;
Nor can zero (hard to see!)
In the least oppress us!
Numbers are our pride and joy,
Numbers great, numbers small;
Juggle with them like a toy
At our beck and call.

I know of no better way for a body of undergraduates to keep abreast of the times than through the medium of a well-organized club. It brings them in touch with the ever-increasing enrichment of their subject. The discussions furnish opportunities for the expression of individual ideas and for the application of theories. The importance of research and graduate work is emphasized. The members of the club show a deep interest in this phase of their education and we feel assured that most of them leave us with a feeling that they have been introduced to an extensive and interesting field of thought and labor.

Notices are given of the meetings of the several mathematical associations and the students are invited to attend. When the meetings are held in New York an official representative of Hunter College Mathematics Club attends and gives a report. Out-of-town meetings are reported by members of the teaching staff.

HUNTER COLLEGE,
NEW YORK CITY.